

NEARTIC DESERT DECTICIDAE (ORTHOPTERA). PART II. A NEW GENUS AND SPECIES FROM ARIZONA

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ABSTRACT.— *Platyoplus*, n. gen., is erected for *P. gilaensis*, n. sp., from the Gila Mountains, Yuma Co., Arizona. The method of preservation for these large, soft-bodied insects is described.

The genus and species herein described was discovered in the Gila Mountains, 20 miles east of Yuma, Arizona, on 26 April 1958. The first specimen, found in a crevice of a giant boulder on a rocky ridge, eluded capture; however, other specimens were taken later.

Platyoplus, n. gen.

This new eremophilous, xerophilous, and petrophilous genus portrays characters that would place it between *Ateloplus* Scudder and *Inyodectes* Rentz and Birchim, with closest relationships indicated to *Ateloplus*. There appears to be little relationship shown to *Eremopedes* Cockerell and *Pediodectes* Rehn and Hebard. A review of the cercal features found in *Ateloplus* shows that four species, namely, *notatus*, *luteus*, *hesperus*, and *splendidus* have rather slender cerci with inner apical uncinatate hook, while *minor* and *schwarzi* have shorter, quadrate cerci with inner apical tooth. The cerci of *Platyoplus*, with an inner subapical projection with uncinatate tooth, is somewhat like that in *Oreopedes* Rehn and Hebard but is amply distinct in many ways. On the other hand, the features of the pronotum are quite ateloplloid in nature; but even here the diagnostic differences are the shallower lateral lobes, which are quite outwardly flared and with those portions of the lateral lobes of the metazona tumidly raised and semitransparent above the greatly enlarged tympanum, which in itself is diagnostic for the genus. Such features, the writer believes, warrant generic recognition. Experience based on many years of study convinces the author that any member of a particular genus must have the same characters as the other species of that genus. Thus the cercus of *Ateloplus* has an inner apical tooth, whereas in other genera such as *Platyoplus* and *Eremopedes* the inner cercal tooth is subapical or intermediate in position, although in some *Eremopedes* the cercus is also undulate and quite distinctive in character. Likewise, the pronotum in the various genera such as *Platyoplus*, *Ateloplus*, *Eremopedes*, *Pediodectes*, *Inyodectes*, and *Oreopedes* are different in each genus. Added to these and other characters not mentioned is the true tympanum, which is distinctive in the various genera mentioned above and portrays its greatest development in *Platyoplus*.

DESCRIPTION.— Head broad and rather shallow, face with greatest breadth just below compound eyes, its breadth $1\frac{1}{4}$ times depth

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from vertex to clypeal suture. Fastigium with frontal costa broad, flat, abruptly terminated intermediately between the antennal sockets.

Pronotum diagnostic, flat and broad, its breadth equal to its length, with shallow, reflexed lateral lobes; metazona shorter than prozona, its lateral lobes tumidly swollen over upper half of greatly enlarged true tympanum.

Penultimate abdominal notite, with shallow U-shaped median groove. Cerci moderately slender, with an inner quadrate subapical prominence bearing an unciniate hook.

Legs average, strong; caudal femora stout and shorter than in related genera, with both ventral keels bearing six widely spaced teeth in the apical half. Caudal tibiae fully spined, with numerous teeth along the entire ventral keels and with four pairs apically on the upper carinae of the caudal tibiae.

Ovipositor stout, apical portion very slightly recurved, apex barely surpassing geniculae of caudal femora. Subgenital plate with a small, V-shaped median notch situated apically in the male; in female, deep median emargination, its margins very strongly raised with keels continuing basally and convergent with an additional very high and narrow median keel connecting from base of deep, U-shaped emargination to base of plate; this character quite diagnostic for genus and not observed in related genera.

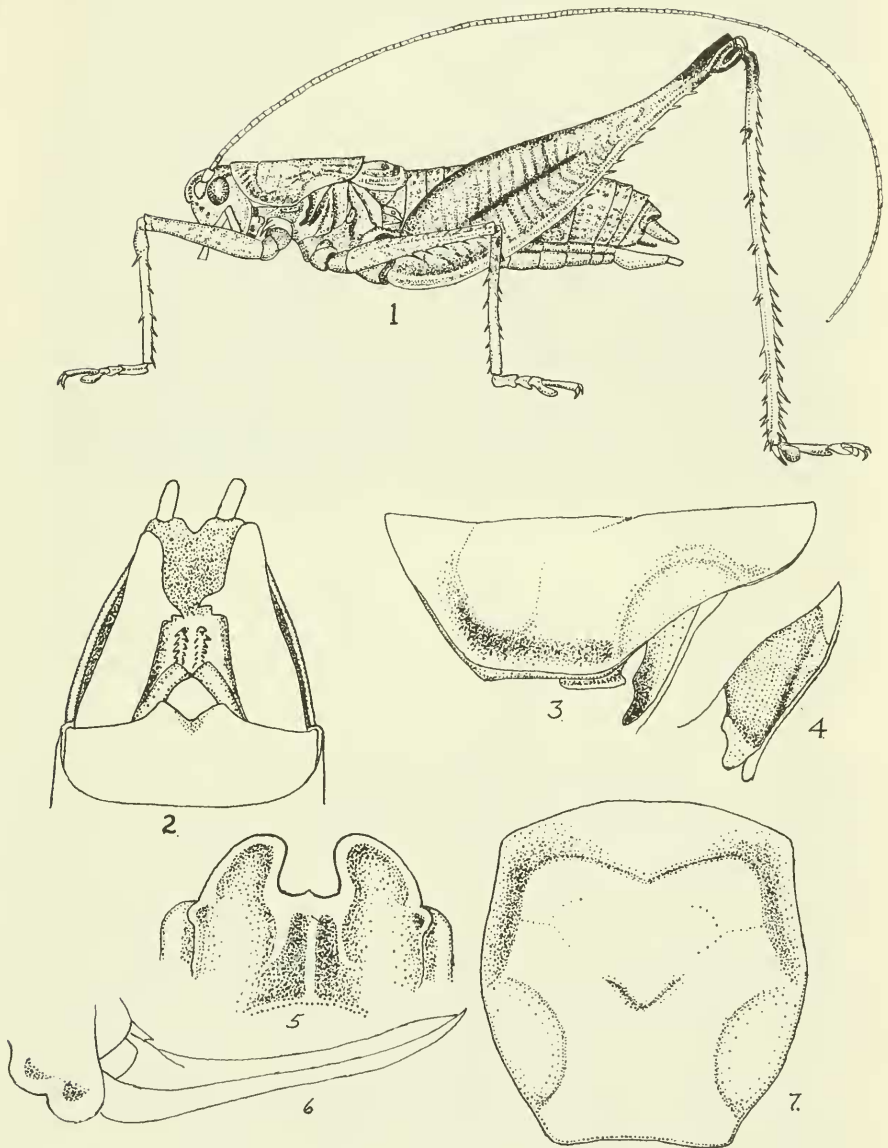
Coloration pale brownish with very fine mottling of pale purplish dots and with genicular areas of caudal femora black.

TYPE SPECIES.— *Platyoplus gilaensis* Tinkham, by monotypy. This genus is named after the very broad and flat pronotum which partially hides the very large true tympanum. The species is named after the Gila Mountains, that barren range of rocks about 20 miles east of Yuma, Arizona.

Platyoplus gilaensis, n. sp.

DESCRIPTION.— Male: head concolorous, unmarked; eyes subglobose, their depth about equal to their breadth. Antennae fully twice body length. Head broad and short, facial breadth just below compound eyes $1\frac{1}{4}$ times depth from vertex to clypeal suture. Fastium angularly rounding into flat and smooth frontal costa, its margins convergent forward and roundly terminated medianly between antennal sockets.

Pronotum diagnostic, quite flat with breadth equal to length, very shallowly rounded into flaring lateral lobes; metazona nearly flat due to tumid swelling of metazonal lobe above upper half of greatly enlarged true tympanum; tympanum broadest in its apical half under swollen metazonal flange. Metazona shorter than prozona; prozona with a prominent but shallow, very broadly V-shaped sulcus, about two-fifths of prozonal length posterior of anterior margin. Anterior margin of the pronotum very smoothly arcuate for its entire breadth to the anterior lateral angle of lateral lobes; posterior margin almost squarely truncate, with at most only a slight sugges-



Figs. 1-7. *Platyoplus gilaensis* Tinkham: 1, Male holotype, profile view; 2, Genitalia of male holotype showing notite, cerci, titillators and subgenital plate; 3, Lateral view of pronotum of male holotype; 4, Tympanum of male holotype; 5, Posterior portion of subgenital plate of female allotype; 6, Lateral view of ovipositor of female allotype; 7, Dorsal aspect of pronotum of male holotype.

tion of emargination. Lateral lobes, seen from above, arcuately rounded, metazonal area outwardly bowed due to convexity of metazonal lateral lobe area above enlarged tympanum—a feature distinguishing *Platyoplus* from all other desert dectidids. Tympanum very large.

Entire body surface smooth. Abdomen with ultimate notite bearing a moderate, median, V-shaped notch. Cercus moderate in build, broadest at base and very slightly tapered to apical two-thirds, inner margin of this area with a quadrate projection bearing a small, inner, slightly uncinuate tooth. Subgenital plate with posterior lateral margins straight and with a median, posterior, V-shaped notch flanked outwardly with a short stylus. Plate distinguished further by a prominently rounded ridge extending anterior-laterally from base of each stylus, the ridges merging with basal portions of plate.

Wings exposed for a length equal to that of the metazona.

Forelegs with prominent procoxal spur; profemora with one to three very small inferior spines on exterior margin (leg forward) and four slightly larger spines on inner ventral keel. Protibiae with six or seven usually paired larger spines on ventral keels and two outer external spines dorsally, one of which is basal. Mesoleg without mesocoxal spine; mesofemora with five outer and two inner subapical small spines on ventral keels (legs in backward position); mesotibiae with six pairs of ventral spines and two pairs dorsally, as in protibiae. Hind legs with caudal femora bearing six spines on each ventral keel. Caudal tibiae heavily spined; 27-28 external and 24-26 internal strong spines on ventral keels and eight outer and inner attingent, widely spaced, slender spines on upper keels (ventral in position on folded legs). All tarsi three-segmented.

Living Coloration (notes made 1965): Head with face faintly purple gray; eyes with incomplete cross-striations of purplish brown. Antennae reddish brown, nodes narrowly ringed in darker reddish brown. Pronotum dull grayish brown, tinged more definitely with burnt umber on central portions of metazona and more narrowly on front central edge of prozona. Tegmina pale purplish gray, with cells in exposed central portions piceous. Abdomen above citrus yellow, profusely and finely mottled with dark purplish brown, posterior marginal areas with about 12 washed or running spots of dark reddish brown. Sternites of thorax and abdomen citrus yellow. Fore and middle legs pale reddish brown; caudal femora pale reddish brown, outer pagina with a single central piceous band heaviest posteriorly; geniculae and pregenicular area dark piceous or almost black; spines of lower keel dark reddish brown. Caudal tibiae pale reddish brown, piceous at extreme base with both dorsal spine rows tipped in apical half with reddish brown; fewer scattered ventral spines similarly colored.

Female: Slightly larger than male, but otherwise closely similar in coloration and spination of legs. Ovipositor slightly shorter than length of abdomen, rather heavy in build and very gently recurved, apex of ovipositor barely exceeding apices of caudal femora. Subgenital plate diagnostic, with a large and deep quadrangular emargi-



Fig. 8. Photograph of living *Platyoplus gilaensis* Tinkham on rock of native habitat.

nation occupying two-fifths of total length of subgenital plate. Lateral margins of emargination prominently raised and extending basally to terminate in an arcuate fashion about half the distance to base of plate, plus a prominent median keel running from center of quadrangular emargination to base of subgenital plate.

HOLOTYPE.— Male, Telegraph Pass, Gila Mountains, Yuma County, Arizona, 20 miles E Yuma, Arizona, 800 ft elevation, 30-V-1965 (night collecting on Creosote *Larrea divaricata* on steep rocky slopes; Ernest R. Tinkham). Caliper measurements in mm: body length 22.0; pronotum 7.75 long x 7.2 broad; tegmina exposed 2.0; caudal femora 24.3; antennae 51.5. Holotype deposited in the Tinkham Eremological Collection.

Female allotype: Same data as holotype. Caliper measurements in mm: body length 24.9; body length to apex of ovipositor 39.2; ovipositor 16.0 x 1.6 in middle; pronotum 7.7 x 7.7; antennae 51.6; caudal femora 24.9 x 5.2. Allotype in the Tinkham Eremological Collection.

Male paratypes: Twelve males same data as holotype; 2, 25-IV-1960. Range in calipered measurements (mm): body length 21.6-28.2; pronotum 7.2-8.1 (length) x 7.2-7.2 (breadth); caudal femora 23.1-24.0. Paratypes identical to the holotype male in every respect including coloration.

Female paratypes: Twelve females same data as allotype. Range in calipered measurements (mm): body length 23.6-27.6; total body length to apex of ovipositor 38.5-42.0; pronotum 8.2-8.8 x 7.2-7.8 (breadth); caudal femora 24.1-26.0; ovipositor 15.7 x 15.7.

Paired paratypes will be presented to such major orthopterological museums as the following: Academy of Natural Sciences of Philadelphia, British Museum, California Academy of Sciences, University of Michigan Museum of Zoology, Smithsonian Institution, and the Tinkham Eremological Collection.

BIOLOGY.— With the advent of the necessary winter rains in the Colorado Desert, it is believed that the nymphs hatch out either in the late fall or early winter. By late May the nymphs are in their last nymphal stadia and become adults in late June or very early July. The author has kept them alive in his home until late November, but whether they would survive the torrid heat of their rocky, inhospitable habitat in the Gila Mountains is questionable.

Faunal Designation: *Platyoplus gilaensis* is a member of the Colorado Desert fauna, since the Gila Mountains represent the eastern periphery of that desert. The area ranging from just east of the Gila Mountains and extending 100 miles to Gila Bend is Gila Desert. Both are eremological components of the Great Sonoran Desert, which is composed of seven different deserts. At or in the region of Gila Bend, the Gila Desert merges with the Sahuaro Desert.

Floral Characteristics: In addition to *Larrea divaricata*, and *Franseria dumosa* growing sparsely on boulder-strewn slopes, *Bursera microphylla* is here more commonly represented than in any other desert sierra in the United States. Occasional *Cercidium microphyllum* and *Hyptis emoryi*, *Hoffmanseggia microphylla*, *Franseria ilicifolia*, *Ditaxis lanceolata*, *Eneclia farinosa*, and rarely *Carnegiea gigantea* are all characteristic of these barren, but very interesting, mountains.

Orthopteran associates: The orthopteran fauna is naturally quite impoverished, even in good years when up to three inches of rain may fall. However, since drought years have prevailed for the past decade, it is likely that some of the members present in the early forties are now extinct. Thus, *Tanaocerus* reported as *koebele* in 1947 has not been seen since 1942. Likewise, *Oedomerus coralipes*, discovered in 1942 and reported for the first time in the United States in 1947, may also be close to extinction. Other orthopterans taken in the forties, including *Arphia aberrans*, *Tytthotyle maculata* the Malpais Lubber, and even *Trimerotropis p. pallidipennis*, have not been seen since 1949. Two other orthopterans are known from the Gila Mountains, namely, *Schistocerca vaga* and *Capnobotes fuliginosus*, both considered very rare.

Host Plants: *Platyoplus gilaensis* was first discovered hiding in a crevice of a giant boulder by day, in 1958, and it was not until 1960 that the first specimens were taken by night collecting. The subadult nymphs were found feeding in creosote bushes, about the only plant available in that habitat. On another occasion, also on creosote, a fine colony was found in a small mountain canyon. As far as is known, creosote is the host plant in nature.

Song: The stridulated note of *Platyoplus* is a soft "zee-zee-zee," long continued but scarcely audible beyond ten feet. The very large

tympanum characteristic of *Platyplus* may be necessary in order to hear the feebly stridulated song.

Specimen preservation. Considerable has been written about the preservation of desert dectoids, which are admittedly hard to preserve while maintaining colors that are close to those existing in the living creature. The usually large bodies filled with body fluids and the delicate coloration make good preservation difficult. The secret to fine preservation of body and color is the immediate gutting of the specimen upon its death. The dectoids are collected alive in the field in specially designed cages, which the author has designed for the occasion. In this particular case, the large series of subadults was collected in the mountains in late May and removed to the author's home for proper study. Many biological notes were taken while the subadult specimens were developing into adults. In August, when the adults had been imagos for a month and all tissues were well hardened, small series at a time were killed with potassium cyanide. Each specimen killed was then immediately gutted by removing the alimentary tract and the gonads through a snip centrally or laterally on the three or four basal abdominal sternites. A little careful swabbing should be done to remove excess liquid, but care should be taken not to damage or disturb the subcutaneous color structure. A small fluff of cotton can then be inserted through the incision, although this is not necessary. If cotton is used, care should be taken that it not be rolled, because if a roll of cotton were pushed into the thoracic cavity, insertion of the insect pin could cause the whole to be pushed through the thoracic sternites, to the ruination of the specimen.

The specimens are now ready to be pinned, with legs and antennae arranged with the use of additional pins, on a sheet of balsa or white plastic cellulose. When the legs have been positioned by the pins and the antennae pulled back and positioned so that they lie along the dorsolateral line of the body, the creatures are ready for drying.

The pinning block is now placed in a gas or electric range. If gas, the oven should be only at pilot heat; that is, no burners on and the temperature no more than 125 F. Here they are watched and removed after several hours when dry. Care must be taken not to use more than gentle heat, since color injury can result. After several hours the specimens should be dry and the coloration in life almost perfectly preserved. Living color notes should be made of the freshly killed creatures.

One other method, relatively new, is also available. This is the freeze-dry method, where the creature is frozen immediately upon killing or death and left frozen for a long period of time, during which time it is completely desiccated by the cryoprocess. If this method is used, it may be necessary to relax the specimen or specimens overnight unless the specimens were pinned and legs arranged for the cryoprocess, which all depends upon the space available in the freezer.

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AN UNUSUAL POPULATION OF SPIDERS IN UTAH

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An unusual population of spiders belonging to the species *Neoscona oaxacensis* (Keyserling) was observed on West Mountain in Utah County, Utah, by Miss Mary Fenley and her mother, Mrs. Ed. J. Fenley, of Provo, Utah, while on a Labor Day outing in 1971. They kindly directed my attention to the phenomenon.

West Mountain is situated in a north-south axis along the south-eastern side of Utah Lake. Its three major peaks have elevations of 6083, 6813, and 6904 feet, respectively. The level of the lake is at approximately 4487 ft. The predominant vegetation consists of various grasses along the foothill areas, and sagebrush and rabbit brush merging with a scattering of juniper trees at the higher elevations.

The spiders were densely distributed over several acres in the sagebrush and rabbit brush about midway up the mountain on the northern slopes. Only adults were present, and the females were predominant in number. The webs were not ornate as is typical of some of the other species of orb weavers. The radii of the webs were almost exclusively situated in some part of the individual shrub rather than in the spaces between shrubs. However, bridge lines frequently extended between separate plants. The bridge lines were of unusual strength, causing the limbs of plants to which they were attached to bend toward one another. As I walked between the plants and consequently broke the bridge lines, the tension of each line against my legs was almost like that of a lightweight twine.

Several random counts were made of the unusually high population of spiders. These varied from 10 to as many as 60 individuals per square meter. In more than 20 years of extensive field investigations in temperate desert areas I have never observed such a high, localized population of spiders of any species. Some of my colleagues stated that they had noted that populations of spiders of other species in Utah were much higher this year than they had ever seen previously; but they had not observed such a density as reported here. Dr. Willis J. Gertsch, who kindly identified the spiders and provided some information on their biology, indicated that many years ago the same species occurred in great numbers on the old Saltair Pavilion on the shore of Great Salt Lake west of Salt Lake City. Incidentally, Ralph V. Chamberlin at that time named the species *Neoscona saleria*, now a synonym.

According to Dr. Gertsch, *Neoscona oaxacensis* is a common orb weaver of the southwestern United States, ranging southward through Mexico to Panama. The species has had several names, probably the most familiar of which is *N. vertebrata* McCook, based on specimens from California. *Neoscona oaxacensis* is probably the

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largest of the species of the "smaller" round-shouldered araneas with elongate oval abdomens.

It is a species that often lives in clusters, with males, females, and the young stages living close together in webs. However, they are not necessarily tied by social habits, and their webs are single and not communal ones.

Continued annual observations of this species on West Mountain in order to determine cyclical population fluctuations related to environmental influences would be desirable.